

CHROMOSOME STUDIES IN THE SOUTHERN AFRICAN FLORA: 30-37

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30. *ALOE RUPESTRIS* Bak.

CHROMOSOME NUMBER: $2n = 14$ (Figs 1a, b).

ORIGIN OF MATERIAL: Hills near Greytown, Zululand, C. G. Vosa 2362.

METHOD OF PREPARATION: Root-tip material, colchicine pretreatment. Feulgen (acetic-orcein) staining.

OBSERVATIONS: This species, and the seven others in this contribution, have been collected in the wild by the author as young seedlings. Together with voucher material raised from seeds, these are kept as living material at the Botany School and at the Botanic Garden, Oxford.

In all the species the karyotype is strictly bimodal with eight large (L) and six small (S) chromosomes.

Secondary constrictions and allocyclic regions of paler staining occur in intercalary and distal positions in most short arms of the L- and in the long arm of the S-chromosomes. Relatively thin secondary constrictions are sometimes found also in the long arm of the L-chromosomes.

The nucleolar attachments are generally distally located in the long arm of the L-chromosomes in the form of small satellites, and are usually found in heterozygous conditions in one, two or sometimes three chromosome pairs.

The morphology of the chromosome complement in *Aloe* is very similar to that found in *Haworthia* (Brandham, 1971; Vosa and Bayer, 1981).

The only detectable differences, relative only to the species so far investigated, are: 1) in most species of *Aloe* the S-chromosomes are slightly larger and 2) the chromosome complement of *Aloe*, overall, has less allocyclic segments than *Haworthia*.

In the line illustrations the haploid karyotypes have been prepared with measurements taken by camera lucida in three to five seedlings for each species. The nucleolar attachments are indicated by circles. In the micrographs the bar represents 10μ .



FIG. 1A

Mitotic metaphase in *Aloe rupestris* Bak. Note the secondary constrictions in the long arms of the second L-chromosome pair (arrows).

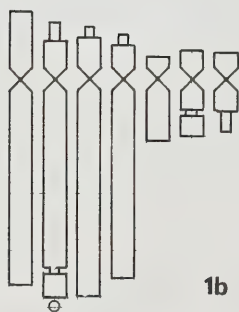


FIG. 1B

Diagrammatic representation of the haploid karyotype of *Aloe rupestris* Bak.

31. ALOE GRANDIDENTATA Salm Dyck

CHROMOSOME NUMBER: $2n = 14$ (Figs 2a, b).

ORIGIN OF MATERIAL: Fauresmith Veld Reserve, O.F.S., C. G. Vosa 2300.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: In this species there are only two readily visible allocyclic segments distally located on the long arm of the shortest S-chromosome pair.



FIG. 2A
Mitotic metaphase in *Aloe grandidentata* Salm Dyck.

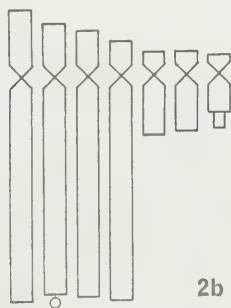


FIG. 2B
Diagrammatic representation of the haploid karyotype of *Aloe grandidentata* Salm Dyck.

32. ALOE STRIATA Haw.

CHROMOSOME NUMBER: $2n = 14$ (Figs 3a, b).

ORIGIN OF MATERIAL: Hell Poort, Grahamstown, C. G. Vosa 2364.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: Only two L-chromosome pairs possess allocyclic segments.

3a

FIG. 3A
Mitotic metaphase in *Aloe striata* Haw.

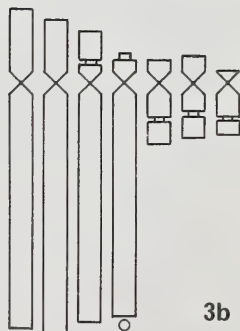
**3b**

FIG. 3B
Diagrammatic representation of the haploid karyotype of *Aloe striata* Haw.

33. ALOE ECKLONIS Salm Dyck

CHROMOSOME NUMBER: $2n = 14$ (Figs 4a, b).

ORIGIN OF MATERIAL: Keiskamma Hoek, King William's Town, C. G. Vosa 2299.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: Only one L-chromosome pair has sizeable allocyclic segments.

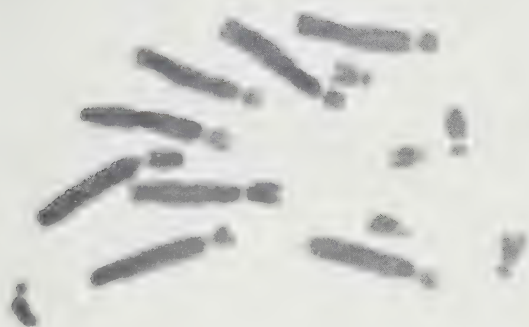
4a

FIG. 4A
Mitotic metaphase in *Aloe ecklonis* Salm Dyck.

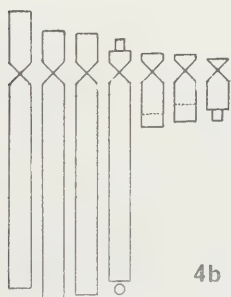
**4b**

FIG. 4B
Diagrammatic representation of the haploid karyotype of *Aloe ecklonis* Salm Dyck.

34. ALOE CANDELABRUM Berger

CHROMOSOME NUMBER: $2n = 14$ (Figs 5a, b).

ORIGIN OF MATERIAL: Umkomaas Valley, near Ixopo, C. G. Vosa 2298.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: The L-chromosomes have relatively longer short arms than in other species.

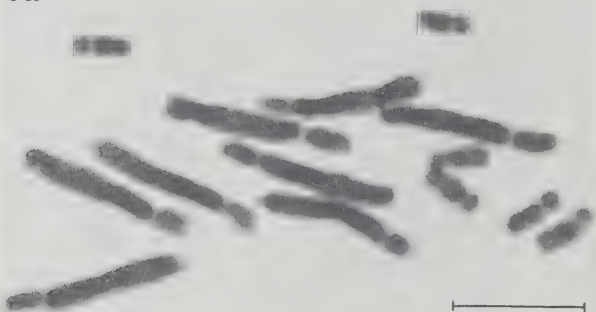
5a

FIG. 5A
Mitotic metaphase in *Aloe candelabrum* Berger.

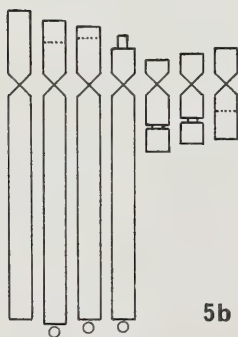


FIG. 5B
Diagrammatic representation of the haploid karyotype of *Aloe candelabrum* Berger.

35. ALOE DICHOTOMA Masson

CHROMOSOME NUMBER: $2n = 14$ (Figs 6a, b).

ORIGIN OF MATERIAL: On koppies near O'okiep, Namaqualand, C. G. Vosa 2297.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: Two pairs of L-chromosomes have secondary constrictions located in the distal part of the long arm. This species possesses relatively small allocyclic segments.

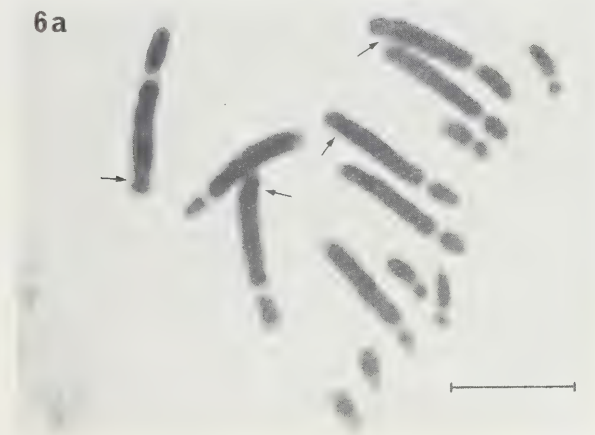


FIG. 6A

Mitotic metaphase in *Aloe dichotoma* Masson. Note the secondary constrictions in the long arms of the first and second L-chromosome pairs (arrows).

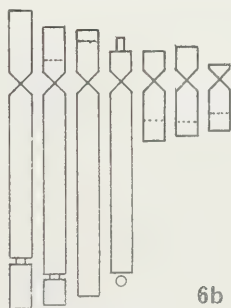


FIG. 6B

Diagrammatic representation of the haploid karyotype of *Aloe dichotoma* Masson.

36. ALOE SPECTABILIS Reynolds

CHROMOSOME NUMBER: $2n = 14$ (Figs 7a, b).

ORIGIN OF MATERIAL: Tugela River Valley, Helpmekaar, C. G. Vosa 2302.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: The karyotypes of the two colour forms of this species (see Reynolds, 1950: p. 479) are indistinguishable.

7a

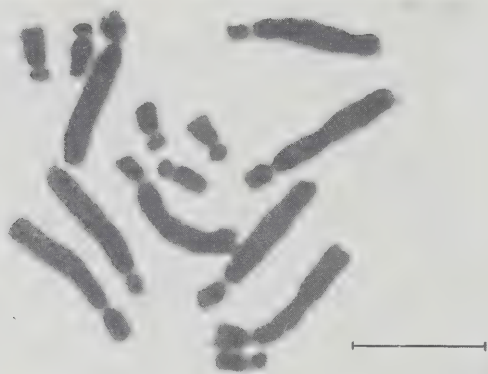


FIG. 7A

Mitotic metaphase in *Aloe spectabilis* Reynolds.

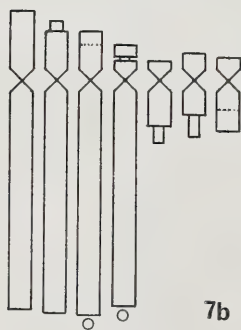


FIG. 7B

Diagrammatic representation of the haploid karyotype of *Aloe spectabilis* Reynolds.

37. ALOE RAMOSISSIMA Pillans

CHROMOSOME NUMBER: $2n = 14$ (Figs 8a, b).

ORIGIN OF MATERIAL: Hells Kloof, N. Namaqualand, C. G. Vosa 2043.

METHOD OF PREPARATION: As in 30.

OBSERVATIONS: One L-chromosome pair has a secondary constriction located in the distal quarter of the long arm.

8a

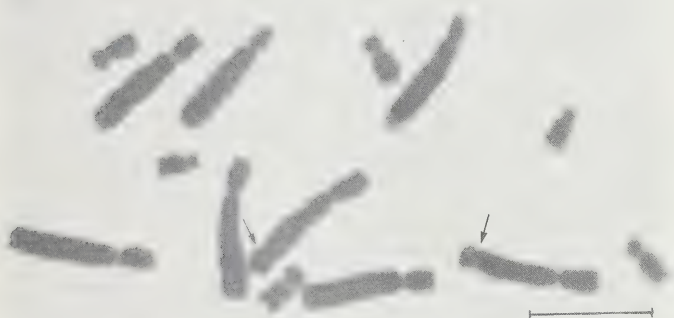
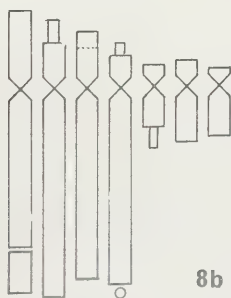


FIG. 8A

Mitotic metaphase in *Aloe ramosissima* Pillans. Note the secondary constrictions in the long arms of the first L-chromosome pair (arrows).



8b

FIG. 8B

Diagrammatic representation of the haploid karyotype of *Aloe ramosissima* Pillans.

REFERENCES

- BRANDHAM, P. E., 1971. Chromosomes in the Liliaceae: II-Polyploidy and karyotype variation in the Aloineae. *Kew Bull.* **25**: 381-399.
- VOSA, C. G. and BAYER, M. B., 1981. Chromosome studies in the Southern African Flora: 10-21 (*Haworthia*). *Jl S. Afr. Bot.* **47**: 687-700.